Amendments to the Specification

Please add the following new paragraph on page 1 after the title "Human Potassium Channel Polynucleotides and Polypeptides and Uses Thereof":

The present application is a division of U.S. Patent Application Serial No. 09/173,109, filed October 23, 1998, now U.S. Patent No. 6,395,477.

Please replace the paragraph starting with "Figure 1A" on page 4 with the following amended paragraph:

Figure 1A. ~~Amino acid sequence of human Kv4.3 long and alignment with rat Kv4.3 long, rat Kv4.2, and mouse Kv4.1. The S1-S6 and P-domains are overlined. The three amino acid difference between human and rat Kv4.3 are denoted with down arrows (153,501,687). The 19 amino acid alternative splice site is indicated with a double underline (488-512). The serines (505,509) are putative PKC consensus sites with the insert region~~ Human Multi-Tissue Northern blot, probed with human Kv4.3.

Please replace the paragraph starting with "Figure 1B" on page 4 with the following amended paragraph:

Figure 1B. ~~(A)~~ Human Multi-Tissue Northern blot, probed with ~~human Kv4.3 (B)~~ b-actin control ~~(C) RT-PCR showing tissue distribution of hKv4.3 splice variants (short and long forms) for the corresponding tissue set.~~

Please add the following new paragraph on page 4 after the paragraph starting with "Figure 1B":

Figure 1C. RT-PCR showing tissue distribution of hKv4.3 splice variants (short and long forms) for the corresponding tissue set.

Please replace the paragraph starting with "FIG. 1A shows" on page 12 with the following amended paragraph:

~~FIG. 1A shows the~~ The complete amino acid sequence of hKv4.3 long with the insert region highlighted~~, along with an alignment~~ is aligned with rat Kv4.3 (Imaizumi et al. 1997), rat Kv4.2 (Baldwin et al. 1991), and mouse Kv4.1 (Pak et al. 1991). When compared to the previously reported rat clones of Kv4.3 (Rudy et al., McKinnon, and Imaizumi), the two variants of the hKv4.3 clones are 91% homologous at the nucleotide level and differ by only three amino acids ~~(FIG. 1A arrows)~~.

Please replace the paragraph starting with "In Rat" on page 17 with the following amended paragraph:

In rat, evidence of two isoforms of Kv4.3 differing by a +/-57 base pair insert. In order to see if a shorter form of hKv4.3 existed in human tissue we synthesized primers that flanked the 57 bp insert in the long form of hKv4.3. These generated products of either 137 bp or 180 bp, reflecting the presence or absence of the 57 bp insertion. Both forms were identified in human brain (~~FIG. 2B~~ FIG. 1C). To clone the shorter version a second set of flanking primers were synthesized and used to generate two bands (767 bp and 710 bp). The shorter band was cloned and sequenced to confirm the absence of the 57 bp region. BglII and SacI sites flank this region and were used with the 710 bp product to directionally clone the shorter fragment of hKv4.3 into the corresponding region of full length hKv4.3.

8. (canceled)

9. (canceled)

10. (currently amended) A non-naturally occurring Kv4.3 polypeptide comprising ~~an amino acid~~ the amino acid sequence of SEQ ID NO: 2.

11. (withdrawn) An oligonucleotide which encodes an antisense sequence complementary to a portion of a human Kv4.3 potassium channel sequence of SEQ ID NO: 1 or SEQ ID NO: 3 and which inhibits expression of the human Kv4.3 gene.

12. (withdrawn) An antibody immunospecific for the human Kv4.3 polypeptide of claim 9.

13. (withdrawn) A method for diagnosing a disease characterized by aberrant expression of human potassium channel Kv4.3 polypeptide of claim 9 comprising (a) incubating a sample indicative of the aberrant expression of the human polypeptide with a reagent comprising a polypeptide comprising a region at least 90% identical to the amino acid sequence of SEQ ID NO: 2 or SEQ ID NO: 4 under conditions effective for specific binding of said reagent to said human polypeptide; and (b) determining the binding of said reagent to said peptide in the sample.

14. (withdrawn) A diagnostic process comprising analyzing for the presence of a polynucleotide of claim 1 in a sample derived from a host.

15. (withdrawn) A method for identifying compounds which modulate the activity or expression of a human Kv4.3 polypeptide of claim 9 comprising (a) incubating a sample comprising Kv4.3 polypeptide in a test medium containing said test compound and a reagent comprising a polypeptide comprising a region at least 90% identical to the amino acid sequence of SEQ ID NO: 2 or SEQ ID NO: 4 under conditions effective for specific binding of said reagent to said Kv4.3 peptide; (b) comparing the binding of said reagent to said peptide in the sample in the presence and absence of said test compound; and (c) relating the difference between the binding is step (b) to the test compound regulating the activity of the Kv4.3 polypeptide.

16. (withdrawn) A transgenic or chimeric animal comprising the polynucleotide of claim 1.

17. (canceled)

18. (canceled)

19. (currently amended) A non-naturally occurring Kv4.3 polypeptide comprising ~~an amino acid~~ the amino acid sequence of SEQ ID NO: 4.

20. (canceled)

21. (canceled)

22. (new) A recombinantly-produced polypeptide comprising SEQ ID NO:2 or SEQ ID NO:4.

23. (new) A purified or chemically-synthesized polypeptide comprising SEQ ID NO:2 or SEQ ID NO:4.

24. (new) An isolated polypeptide comprising SEQ ID NO:2 or SEQ ID NO:4.

25. (new) A Kv4.3 potassium channel produced by expressing from a recombinant vector comprising the nucleotide sequence depicted in SEQ ID NO:1 or SEQ ID NO:3, wherein said nucleotide sequence is operatively linked to one or more expression control sequences.